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ABSTRACT

This paper reports an investigation of the effects of two plans on children's listener behavior in a referential communication setting. The design systematically varied the presence and absence of instructions about a plan to engage in comparison activities (comparison plan), and instructions about a plan to request more information if the speaker's message was ambiguous (action plan). Subjects were 94 elementary school children who played the role of listeners. The speaker was an adult confederate who produced messages of varying informational adequacy. Results show that on an immediate test, children receiving the action plan asked more questions when the messages were ambiguous and made more correct referent choices than other subjects. These effects persisted on a test administered two weeks later. No significant effect of the comparison plan was observed on either the immediate or the delayed test. Overall, the results suggest that knowing when and how to request additional information is an important listener skill. (Author)

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Children's Referential Communication: Components of Plans for Effective Listening

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Development of the ability to communicate effectively by means of the spoken word is surely one of the important achievements of childhood. In studies of referential communication among children, one person - the speaker - has generally been asked to describe a target referent or object in such a way that another person - the listener - can reliably select it from a set of potential referents or distractors, on the basis of the verbal message alone. Older children are usually more effective than younger ones at this task. Studies by Glucksberg, Krauss, and their associates have emphasized development of performance in the speaker role as the factor responsible for these age changes. However, recent studies by Asher, Whitehurst, and others have shown that listener skills also evidence considerable development during childhood.

Mike Cosgrove and I have also been interested in the development of listener skills for referential communication. In one study, we asked 4, 6, 8, and 10 year old children to play the role of listener in a referential communication game. An adult confederate served as speaker for each child, and produced messages which varied systematically in their informational adeqnacy. We observed clear development of listener skill in our sample, in that older children - ten year olds - asked more questions when the speaker's messages were ambiguous or uninformative than younger children did. Since questions were always answered, these older children received more information about the identity of the target referent. And hence, these children also made more correct referent choices.

A second set of finings from this study, however, is more important in the present context. Halfway through the game, some children were given a plan for effective listening. This plan emphasized the importance of determining whether the speaker's message was fully informative or not, and of asking questions if the message was ambiguous. Introduction of this plan had a highly significant positive effect on the listener performances of all but the 4 year old children.

An important question raised by the results with school aged children concerns the features of the plan that were responsible for its effectiveness. One cause of children's initial failures might be a "comparison deficit" - a failure to compare each of the potential referents to the information contained in the speaker's message. Without having completed comparisons of this kind, the listener would not know whether a message was informative or ambiguous. By suggesting that listeners look carefully at referents and formulate discriminating questions, the plan may have encouraged comparison activities. On the other hand, even if they performed comparison activities effectively, children still may not have known what to do if a message was inadequate. This might be called the "action deficit" interpretation of children's difficulties, since the children are said to know when a message is inadequate, but not to know what they can do to reduce uncertainty. Of course, the plan suggested the nature of actions to be taken in these circumstances.

The current study was designed to test these two interpretations. We compared the hypotheses by dividing the plan used in our earlier study into its components, and systematically varying the presence and absence of each component. Thus, the main part of the design for this study consisted of a 2 x 2 factorial in which presence and absence of the comparison plan and the action plan were varied. Our main interest was in the effects of these manipulations on the number of questions asked and on the number of correct referent choices made by each of our young listeners.

We also wanted to evaluate the degree to which effects of the plan were stable over time, and hence we included both an immediate test of listener performance, and a delayed test - administered two weeks later.

We tested 94 children - half in a "younger" group consisting of first and second graders, and half in an "older" group, consisting of third and fourth

graders. However, children's age had little effect on listener performances in this study, so I won't refer to the age factor further here.

There were several different sets of referent items for the study. Each had four potential referents, which varied systematically in terms of two binary attributes, as in this example (Slide 1 here). Thus, the speaker could provide a fully informative message by naming both of the two crucial attributes --- he could say: "it's a girl wearing yellow." Or the speaker could give a partially informative message by saying, "it's a girl." Or he could provide an uninformative message: "it's a person." Although the content of items varied, all of them conformed to the same pattern, as can be seen in the next slide (Slide 2 here).

The experimental setting looked like this (Slide 3 here). There was a table with a divider on it, chairs for the listener and the speaker, and a chair for the experimenter.

Each child was told that although he saw four pictures on each trial, the speaker would see only one (Slide 4 here). The speaker would describe his picture, and the child was to mark the one that matched the speaker's picture (Slide 5 here). The child was told that he would get one point for each correct choice, and that if he got enough points, he would win a Good Player Award, which looked like this (Slide 6 here). The experimenter specifically indicated that it was OK to talk to either adult as much as desired during the game. All children indicated their understanding of the game during a standard interview.

At this point, the experimenter introduced the experimental manipulations. In the comparison plan condition, she suggested that the child try to figure out whether or not he knew enough on each trial to pick out the correct picture. In the action plan condition, she suggested that if the child did not know the identity of the target referent, he could ask questions to help figure it out. In the

comparison and action plan condition, children were given both sets of instructions. Children in the no plan condition received neither set.

All children then completed 24 trials on the communication game. The speaker produced equal numbers of each of the three message types - fully informative, partially informative, and uninformative. Any questions that the children asked during the game were answered. After the last trial, each child was given a Good Player Award.

Two weeks later, the children returned for a delayed test. Each child was reminded of the basic rules for playing the game, but not of the plans. They then participated as the listener, in 24 more trials of the communication game.

The main dependent measures were number of questions asked and number of correct referent choices.

First, I'd like to talk about the data for the number of questions asked. These are shown in Table 1 of the handout. Table 1 presents the means for numbers of questions asked as a function of plan condition (down the left), message type and time of testing (along the top). As you might guess from the means in Table 1, there were highly significant effects of the action plan and of message type. The main effect for the action plan resulted from the fact that children who received this plan asked many more questions than other subjects did. The significant effect for message type reflected the fact that, for the most part, children asked questions only when the speaker's message was at least partially ambiguous. Consistent with these findings, our analysis also yielded a highly significant interaction of the action plan and message type, indicating that the action plan influenced the number of questions asked only on trials when the initial message was not fully informative. These effects held for both immediate and delayed tests, as you can see in the table. Overall, then, the action plan had a positive impact on this aspect of listener performance, but the comparison plan did not.

Children who asked questions when the message was ambiguous recieved more information about the target referent, and hence might be expected to have made more correct referent choices. The data shown in Table 2 of the hand-out show that this is, in fact, the case. As for the data on number of questions, strong main effects for the action plan, message type, and for the interaction of these two factors emerged. Again, there was no effect of the comparison plan. And again, these findings were true both for the immediate and for the delayed tests.

To summarize the results, then: On both immediate and delayed tests, children who received the action plan asked more questions when the messages were ambiguous than those who did not receive this plan. As a result, they obtained more information about the target referent, and made more correct choices. The comparison plan had no effect on children's performances.

Why did the comparison plan fail to affect listener performance? One possibility might be that our instructions were insufficient to elicit appropriate comparison activities in our subjects. This seems unlikely however, in light of the substantial performance increments produced by the action plan alone. Such improvements would be impossible, of course, unless subjects had completed the comparison activities necessary to identify ambiguous messages.. We conclude that the comparison plan had no significant influence on children's performances because the relevant comparison activities were probably completed spontaneously by most subjects.

Our current findings point to the importance of another component of listener skill: knowing when and how to request additional information. We would grant that comparison activities play an important role in referential communication performance. But after these comparisons have been completed, young listeners may still have difficulty deciding what action to take when a message is unclear. In short, then, our data suggest that knowing when and how to request additional

information is an important listener skill, and that it can be easily facilitated by brief training procedures.

Table 1

Mean Number of Questions Asked as a Function of Plan Instructions, Message Type, and Time of Testing

Type of Plan	Immediate Test			Delayed Test		
	Fully Informative Message[a]	Partially Informative Message[b]	Uninformative Message[c]	Fully Informative Message[a]	Partially Informative Message[b]	Uninformative Message[c]
Action and Comparison	0.6	6.9	14.1	0.8	8.2	14.6
Action Only	0.7	7.0	13.6	0.7	7.9	14.8
Comparison Only	0.2	1.9	3.4	1.1	2.5	4.8
None (Control)	0.0	0.5	0.7	0.3	1.0	2.2

Notes. [a] no questions needed to obtain necessary information

[b] eight questions needed to obtain necessary information

[c] sixteen questions needed to obtain necessary information

Table 2

Mean Number of Correct Referent Choices as a Function of Plan Instructions, Message Type, and Time of Testing*

Type of Plan	Immediate Test			Delayed Test		
	Fully Informative Message	Partially Informative Message	Uninformative Message	Fully Informative Message	Partially Informative Message	Uninformative Message
Action and Comparison	8.0	7.5	6.4	7.8	7.1	7.1
Action Only	8.0	7.4	6.9	7.8	7.1	7.2
Comparison Only	8.0	5.1	3.9	7.6	4.6	3.2
None (Control)	7.9	4.8	2.7	7.6	3.7	2.2

*eight is a perfect score in each cell